city as organism

new visions for urban life

22nd **ISUF** International Conference | 22-26 september 2015 Rome Italy

edited by
Giuseppe Strappa
Anna Rita Donatella Amato
Antonio Camporeale

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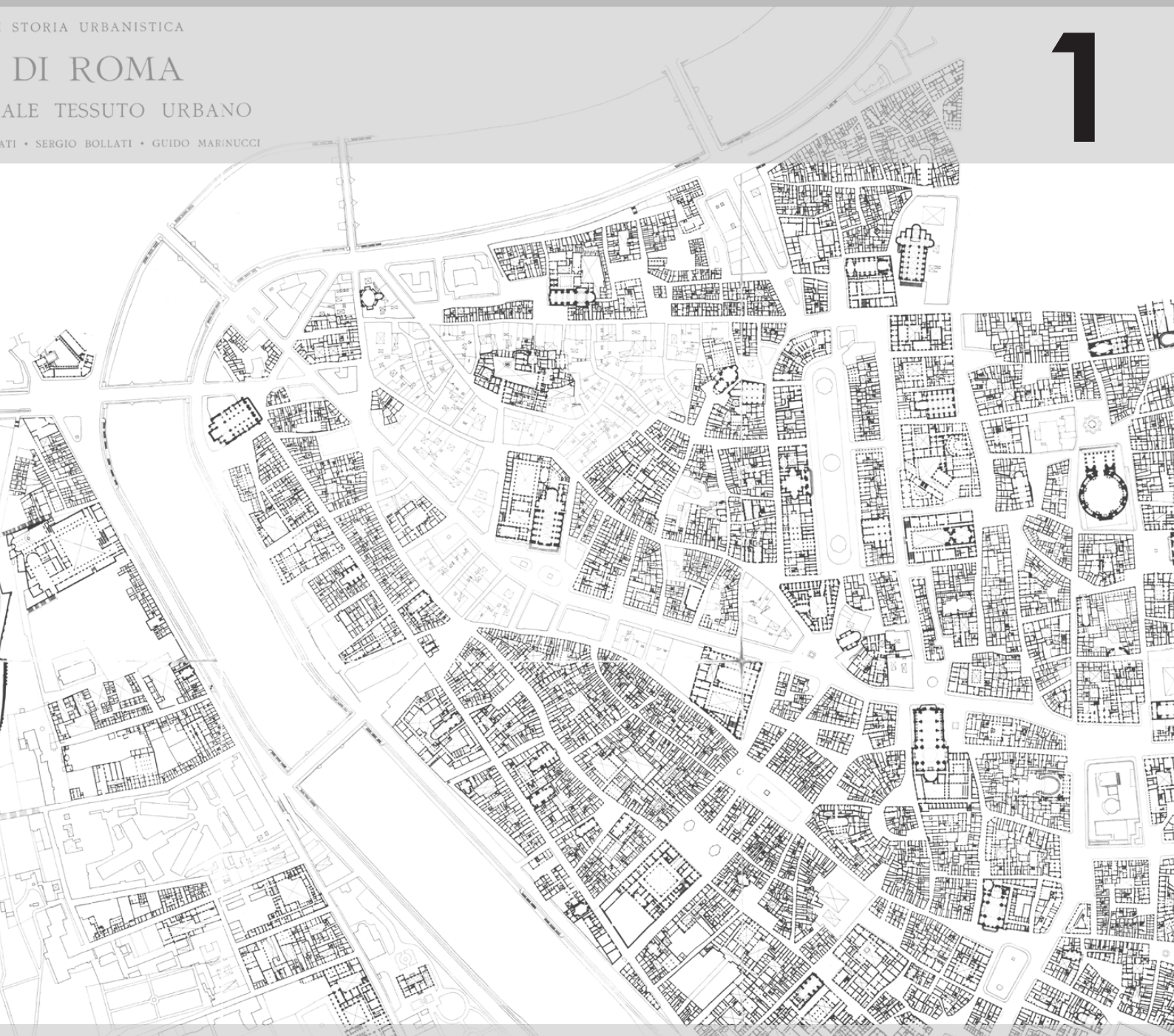

Rome as Organism
Heritage and Historical Fabric
Landscape and Territory
Sustainable Design and Urban Regeneration

U+D edition

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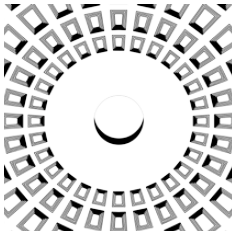

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U+D edition Rome
ISBN 97888941188-1-0
May 2016

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Contents Volume 1

The great dimension housing complexes as a place for urban regeneration

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Keywords: regeneration, density, social housing

Abstract

The large-dimension housing complexes in Rome have grown since the late '60s as a result of the 1st PEEP planning of 1964. The plan tried to face the large housing emergency caused by the rising urbanization (Albano, 2001). The peripheral areas of the city started to be filled with several neighborhoods in sharp break with the close urban fabric: high-density neighborhoods that for conformation and urban characteristics were placed in contrast to the existing compact city. This discontinuity is highlighted by urban scale designing approach, described by wide spaces for gardens and high speed roads, separating isolated great-size buildings.

Approaching the city as an organism in constant evolution in space and time (Piccinato, 1941) and composed of continuous additions and modifications (Rossi, 1966), these neighborhoods resulted immediately as amorphous objects, autonomous from the continuity of the existing city and isolated from the network infrastructure. Nowadays, after about forty years, they still live in strong isolation conditions, becoming the focus to look at for urban regeneration interventions.

The proposal article suggests a comparison between the great-size neighborhoods and the conventional compact ones by the analysis of different density data (floor area ratio, population density, cubic meter built on the covered area, green area ratio) in order to stress the morphological differences for the possibilities of transformation.

The transformability of some case of studies (CastelGiubileo, VigneNuove, Pineto, PrimaPorta, Torevecchia) are analyzed up to the building scale, through modeling correlating structural and technology performances with the morphological characters.

Introduction

The housing emergency in metropolises, as Rome, raised up at the beginning of '60s as a consequence of the urbanization process. This key problem forced the public Authorities to play out some important urban decisions. The main objective was to realize a significant number of dwellings in order to move inhabitants from subaltern situations of slums that were arising in the peripheral areas.

In Rome, in 1994 the Administration proposed the 1st plan for social housing (P.E.E.P.): a plan for more than 700 thousands inhabitants.

As the plan was activated, several neighbourhoods, characterized by great size housing complexes characterized by conformations and urban characteristics in sharp break with the urban fabric of the existing compact city, gradually arose in the peripheral areas.

Approaching the city as organisms in constant evolution in space and time (Piccinato, 1941) and composed of continuous additions and modifications (Rossi, 1966), these neighbourhoods resulted immediately as amorphous objects, autonomous from the continuity of the existing city and isolated from the network infrastructure. This discontinuity with the traditional urban fabric is highlighted by urban scale designing approach, characterized by wide spaces for gardens and high speed roads that separate isolated great-size buildings.

By the comparison between these great-size neighbourhoods and the conventional compact ones emerge very clearly their morphological differences. The differences are stressed by the analysed density data, such as the floor area ratio, the population density, the coverage and the green area ratio. The results showed for great-size neighbourhoods low values for each density but significant values in terms of building concentration. This concentration and bigness often suggest low values of covered area and high values of green area ratio.

The general urban conformation has important influences also at the building scale. The great size urban interventions influenced in fact the designing choices in terms of typology and construction. Some interventions, such as mega-structures, propose solutions in line with the international propositions of that time (the international movement of megastructures of the beginnings of '60s). In other cases, the great size of buildings are only a continuous repetition of typological standard solutions.

Nowadays, after about forty years, the 1st PEEP neighbourhoods still live in strong isolation conditions. The spaces intended for public gardens and parks are now untreated and abandoned. The buildings live situations of material decay and general social issues such as unemployment and precariousness enhanced by the global crisis. This widespread situation of emergency makes these districts a priority of the urban regeneration policies.

This necessity of regeneration is supported by the general morphological conformation of the urban design of these great size interventions. The great empty spaces available, often exceeding in terms of streets and parking, implies good chances for future transformations, such as little and conscious densifications intended for the reconnection with the nearby district, or intervention on the general environmental qualities by actions on the gardens and parks.

In some cases, also the conformation of buildings and their construction give the chance for potential transformations, in terms of densification of ground floors and change of use of the roof floors.

For the global revitalizing of contemporary suburbs, the great size housing districts result the ideal place where to activate urban regeneration projects.

1st PEEP urban analysis

The aerial view of the city of Rome shows an uneven distribution of the built environment among the various zones. It results impossible to identify just two different entities such as a compact centre and a scattered suburb. Most of the neighbourhoods follow each other, each one with its own urban features and its own characteristics in terms of shape and density.

What it is possible to notice very clearly is the sharp discontinuity, in many peripheral situations, between conventional compact neighbourhoods, made of well-defined fabric, with a match between buildings and the road network, and neighbourhoods that are above these dynamics. In these areas, buildings and roads are particularly disengaged from each other, with isolated constructions in large-green areas, connected by high-speed roads.

These districts are, more or less, the 1st PEEP districts (plan for economic and affordable housing).

The plan proposed the growth of the city by additional parts, crowding the central and the semi-peripheral districts, with an uneven fabric in relation with the compact ones. The 1st PEEP districts were characterized by a different scale design, where the architectural project moved toward a larger scale and become urban planning generating what are called "urban architecture".

The Plan of 1964, spurred by a strong demand for housing due to the processes of urbanization, envisaged more than 700 000 rooms on an area of 50 square km. The first interventions began in the late '60s. Following removals and variants, the Plan was reduced to 400 000 rooms. Despite the reduced realization in comparison with its original planning, it still represents an important part of the public housing of Rome (Albano, 2001). With 400 000 and more inhabitants settled on, the 1st PEEP ideally would stand at 7th place in terms of population among the Italian cities, in front of important regional capitals such as Bologna, Florence and Bari. It reaches a total of about 32 million cubic meters of residential housing. Adding the mc for services and trade, the total is just over 36 million cubic meters[1]. Computing variants and integrations, the plan arrives at 442 810 inhabitants. Several are the districts with more than 25 000 inhabitants, among these are cited: Tiburtino South, North, Casal dei Pazzi, Tor Bella Monaca, Laurentino, Spinaceto, Grottaperfetta[2].

An attempt to urban structure is denoted in some neighbourhoods, in the logic of creating an integrated system of infrastructures through the construction of public city, facilities and housing. An example of this is the system of the quarter north-east and south-east, where the city is really structured around the public districts. On the contrary in other cases, the interventions, even of large size, are dispersed and isolated both from each other and from the rest of the close districts.

Nowadays, 50 years after its approval, the Plan has greatly reduced its importance, mostly in terms of council housing. Owing to the process of alienation of public propriety in fact, the number of dwellings administrated by the ATER (the public agency for housing) in 1st PEEP districts, passed from 41 394 to 23 672, with a reduction of 57%. However, the 23 672 accommodation still represent an important value. The regeneration of these 23 672 dwellings means trying to regenerate the whole city.

Density data and transformation

The isolation and the discontinuity with the close neighbourhoods were not unexpected consequences of designing choices, but clear planning wills. The new neighbourhoods were designed in fact with the intention of being isolated and autonomous entities, conceived as finished parts, as a complete portion of the city. In addition, the PEEPs' districts became the occasion to give an order to the development of the shapeless suburbs both regular and irregular, by the addition of formally concluded and functionally self-sufficient neighbourhoods with large number of accommodation, but also facilities and shops.

This difference between conventional and uneven neighbourhoods can be read by comparing the values of different densities, which also allows us to make considerations about their essential characteristics.

[1]The cubic meters are calculated, as what has been done by Albano, multiplying the number of inhabitants per 80 cubic meters / inhabitants and the volume relatively non-residential attributing a share of 15% of the residential.

[2]All the date are taken from (Bossalino, Cotti, 2000).

Figure 1. 1st PEEP in Rome, population density and FAR.

N.	Piano di Zona	REALIZZAZIONI			DENSITA' ABITATIVA	FAR
		stanze (abitanti)	mc totali	superficie totale	ab/ha	SUL/St
1	Castel Giubileo	8,046	724,500	462,000	174	0.52
2	Fidene I	3,445	317,400	246,700	140	0.43
3	Fidene II	1,075	89,010	142,060	76	0.21
4	Serpentara I	8,690	803,300	445,750	195	0.60
5	Serpentara II	10,919	958,518	396,200	276	0.81
6	Valmelaina	15,800	1,308,240	1,214,250	130	0.36
7	Vigne Nuove	8,333	492,730	549,000	152	0.30
9	Prima Porta	4,551	440,000	725,000	63	0.20
10	Casal dei Pazzi	21,143	1,880,555	1,525,400	139	0.41
12	Rebibbia	9,663	864,956	728,600	133	0.40
13	Pietralata	11,380	407,000	850,450	134	0.16
14	Tiburtino Nord	11,048	758,037	1,112,070	99	0.23
15	Tiburtino Sud	37,000	3,309,893	1,875,100	197	0.59
16	La Rustica 1	1,132	104,550	77,800	146	0.45
16a	La Rustica 2	1,548	124,050	127,000	122	0.33
18	Arco di Travertino	2,074	154,386	366,350	57	0.14
19	Tor Sapienza	4,650	446,500	492,780	94	0.30
20	Ponte di Nona	6,651	532,730	666,000	100	0.27
22	Tor Bella Monaca	28,000	2,178,650	1,880,000	149	0.39
23	Casilino	10,903	999,480	403,200	270	0.83
25	Fontana Candida	3,523	324,110	392,000	90	0.28
27	Giardinetti	4,320	297,660	323,000	134	0.31
28	Torre Maura	4,000	367,792	362,000	110	0.34
29	Torre Spaccata Est	4,120	378,927	225,800	182	0.56
30	Torre Spaccata Ovest	2,112	259,000	83,000	254	1.04
31	Osteria del Curato 1	2,070	118,208	192,100	108	0.21
33	Quarto Miglio	1,107	104,038	29,800	371	1.16
34	Cinecittà	1,702	156,638	118,000	144	0.44
35	Cecafumo	930	85,600	20,900	445	1.37
35/a	Roma Vecchia	1,010	92,920	14,500	697	2.14
37	Ferratella	11,019	947,700	536,400	205	0.59
38	Laurentino	30,984	2,722,880	1,645,083	188	0.55
39	Grottaperfetta	28,791	2,630,497	1,315,560	219	0.67
40	Vigna Murata	16,860	1,548,874	842,250	200	0.61
46	Spinaceto	26,612	2,407,500	1,873,250	142	0.43
47	Tor de' Cenci Nord	9,670	875,303	688,400	140	0.42
53	Palocco	1,913	158,544	157,837	121	0.33
55	Ostia Lido Nord	6,987	621,825	644,000	108	0.32
57	Isola Sacra	970	72,824	82,300	118	0.29
59	Colli Portuensi Sud	6,978	567,616	250,000	279	0.76
60	Colli Portuensi Nord	3,392	312,103	339,243	100	0.31
61	Corviale	8,512	760,150	605,300	141	0.42
65	Pineto	4,375	400,000	179,440	244	0.74
67	Acqua Traversa Sud	672	53,760	161,200	42	0.11
68	Primavalle Ovest	8,945	262,799	731,410	122	0.12
70	Cortina d'Ampezzo	545	44,800	152,500	36	0.10
71	S.Maria della Pietà	1,238	102,440	213,500	58	0.16
72	Ottavia Nord	2,137	160,168	204,500	104	0.26
	TOTALE	**401,545**	33,729,161	26,668,983	**151**	**0.42**
		stanze (abitanti)	mc totali	superficie totale	ab/ha	SUL/St
N.	Piano di Zona	REALIZZAZIONI			DENSITA' TERRITORIALE	FAR
	VARIANTI SINGOLE					
15bis	Tiburtino III	4,073	376,248	322,200	126	0.39
74	Torrevecchia 1	3,652	320,000	244,624	149	0.44
79	Casette Pater 1	130	11,360	8,153	159	0.46
81	Quarticciolo	718	62,385	57,680	124	0.36
83	La Lucchina	4,541	327,410	440,000	103	0.25
	TOTALE	**13,114**	1,097,403	1,072,657	**122**	**0.34**
	VARIANTI INTEGRATIVE					
1V	Cinquina	2,290	158,865	327,250	70	0.16
2V	San Basilio	2,500	202,000	255,000	98	0.26
3V	Settecamini	1,740	142,400	116,000	150	0.41
4V	Casale Caletto	2,960	243,150	316,000	94	0.26
10V	Acilia 2	8,532	711,380	627,618	136	0.38
11V	Dragoncello	1,900	143,250	271,400	70	0.18
12V	Acqua Acetosa	2,126	160,120	339,000	63	0.16
13V	Quartaccio 1	2,433	199,050	303,460	80	0.22
14V	Portuense	1,900	157,320	322,800	59	0.16
15V	La Pisana	1,770	146,556	177,000	100	0.28
	TOTALE	**28,151**	2,264,091	3,055,528	**92**	**0.25**
		stanze (abitanti)	mc totali	superficie totale	ab/ha	SUL/St
N.	Piano di Zona	REALIZZAZIONI			DENSITA' TERRITORIALE	FAR
TOTALE complessivo		**442,810**	37,090,655	30,797,168	**144**	**0.40**

Figure 2. FAR values for same important neighbourhoods in Rome.

QUARTIERE	FAR
Batteria Nomentana	2.91
Piazza Bologna	2.91
Don Bosco	2.73
Prati	2.71
Balduina	2.56
Re di Roma	2.38
Campo Marzio	2.18
Esquilino	2.13
Centocelle	2.02
Garbatella	1.92
Cassia	1.23
Labaro	1.17
Montesacro	1.15
Pigneto	0.99

Some studies on density (Reale, 2008) show the FAR values of some different areas of Rome. The Floor Area Ratio (FAR) provides the value of the ratio between the sum of the gross floor area of the different stages of an intervention and the surface on which this gross floor area rests on.

Table 1 and Table 2 show the values of FAR for the interventions of 1st PEEP and for the traditional neighbourhoods of the compact city.

An usual error is to mix up the concept of density and concentration. This distinction becomes very important in analysing the model of town proposed by the 1st PEEP districts. The 1st PEEP interventions in fact present low values of density but a high concentration of few great size buildings in which are condensed all the planned cubic content.

In conclusion, both in terms of FAR and population density, the 1st PEEP city does not turn out to be the high density city as often is defined. The only data that results to be high is the value of land density: the ratio between gross floor area of different stages and the land area of the different built lots. This data does not provide information on the total of the neighbourhood but exclusively on the nature of the different buildings that, as said before, in the 1st PEEP interventions are of great dimension (tall or long to be).

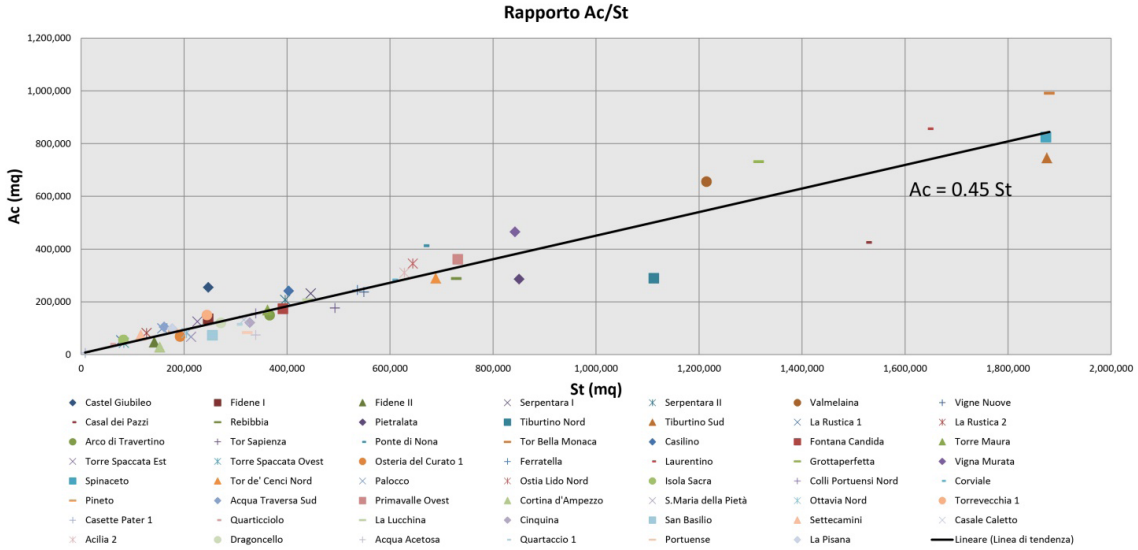
The compact neighbourhoods, from the centre to the suburbs, show values of FAR higher than the 1st PEEP ones. It is possible to identify (table 2) very high density areas such as: Batteria Nomentana (2.91), Piazza Bologna (2.91), Don Bosco (2.73), Prati (2.71). Then there are the high density areas: Balduina (2.56), Re di Roma (2.38), Campo Marzio (2.18) and Esquilino (2.13). The medium-high density neighbourhoods are: Centocello (2.02), Garbatella (1.92), Cassia (1.23), Labaro (1.17), Montesacro (1.15). The last area of the table is Pigneto with a medium value of 0.99 FAR[3].

On the contrary, the different 1st PEEP interventions reach lower values of FAR, with medium-low and low density. Almost all the districts show values between 0.10 FAR (Cortina d'Ampezzo) and 0.83 (Casilino 23). Overall, 47 districts are low-density districts, with FAR less than 0.50. Among these cases it is possible identify particularly populated cases such as: Valmelaina (FAR 0.36 - Population 15,800), Casal dei Pazzi (FAR 0.41 - Population 21,143), Tor Bella Monaca (FAR 0.39 - Population 28,000), Spinaceto (FAR 0.43 - Population 26,612).

Such a clear difference lies in the own characteristics of the model proposed by the discontinuous city. In fact, the settlement model proposed by 1st PEEP provides big surface interventions in which all the cubic content is condensed in few big buildings with a high amount of free land for traffic infrastructure and public green areas. Buildings,

[3]The different "density groups" might be collected: < 0.5 low density, 0.5/1 medium density; 1-3 high density; > very high desinty.

Figure 3. Coverage in 1st PEEP.



observing the precepts of modern architecture, result isolated entities among trees and meadows, with free access to natural resources such as wind and sun.

However, low density values do not directly guarantee availability of spaces for green or streets. On the contrary, low density values are synonymous with widespread interventions of small dimensions (such as single family houses or low height housing) according to the logic of sprawl, that means little spaces for public areas. Therefore, it is necessary to cross the density data with the values of the covered area in order to understand the urban morphological features and the availability of free space of the neighbourhoods analysed.

Graph 1 shows the coverage values. The coverage is the relationship between the ground floor area of enclosed buildings and the area of the interventions. In 1st PEEP district, the average value for coverage is 45%. It means that little less than half area is built, while 55% of the total surface is free. The cases of Casal dei Pazzi and Tiburtino Nord have the lowest values, 28% and 26% respectively.

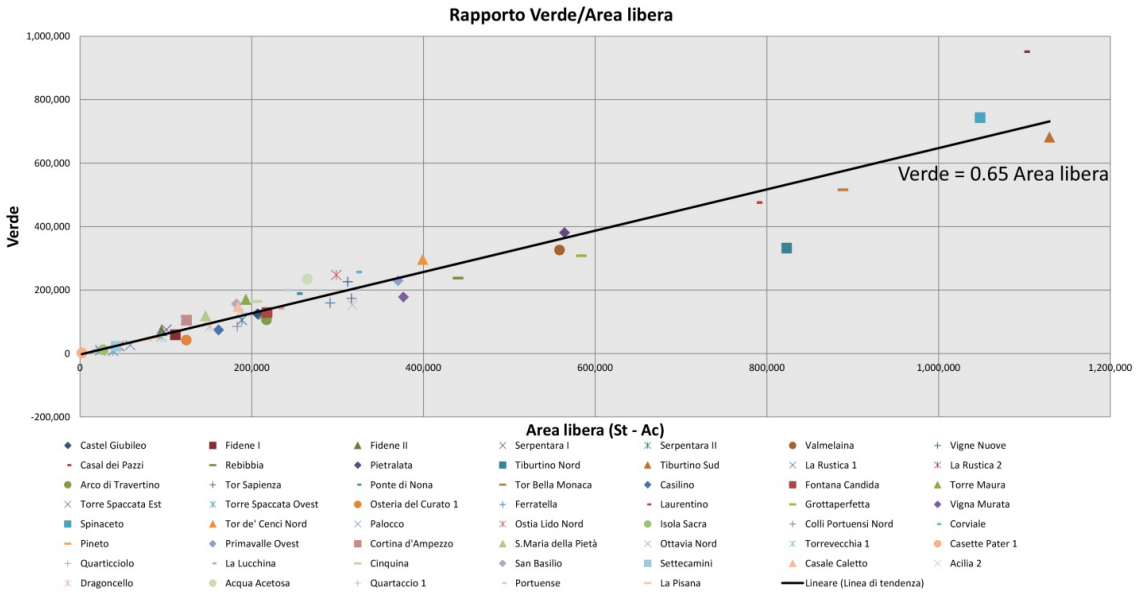
The low value of coverage means that there is a lot of free space. Generally, this space is largely dedicated to public green areas rather than to streets and parking. The average value of green areas on the total free area in fact is 64%, meaning that more than half of the free area is dedicated to public green (graph 2). The case of Casal dei Pazzi, already cited for the low coverage, also has a green area value of 86%. Other important cases are: Spinaceto (green/free area 71%); Tor de Cenci (green/free area 74%); Corviale (green/free area 80%).

In conclusion, it can be stressed that the approach to the new city carried out by planners and designers of the 1st PEEP was radically opposite to that of the conventional city. Basically, there was the desire to create finished and independent parts of the city having high quantities of green and network of expressway in order to isolate the buildings as monuments in the urban landscape.

Nowadays, the economic difficulties of the administration reduce the chance of standard maintenance and conservation of green spaces and buildings, generating a widespread state of neglect and decay.

However, the presence of such extensive green areas is an important natural potential resource, especially in prevision of possible environmental regeneration programmes. The green areas in fact could be environmental high quality elements, taking shape as lungs to contrast the phenomenon of urban heat island.

Figure 4. Green area ratio in 1st PEEP.



In a logic of global regeneration of the suburbs, PEEP neighbourhoods assume an important role because of their morphological conformation, with the concentration of the cubic content in few isolated buildings: the free areas, compared to the covered areas, account for more than half of the total area, guaranteeing the possibility of operating interventions of regeneration with a greater degree of freedom.

It does not mean that the regeneration interventions should necessarily provide the realization of further buildings and the mineralization of the green. Certainly, the large availability of space guarantees both the freedom to operate relocation in temporary buildings located into the empty areas and the freedom of movement for the proper functioning of the construction site. The densification interventions through the construction of new residential units should be planned according to the actual housing demand and the standards availability. These interventions would not just guarantee an housing offer but would act as elements of reconnection with the neighbouring district.

Typology and transformation

In particular, in a logic of regeneration that takes into account environmental aspects and the soil depletion, the possibility of densification should look at interventions on existing buildings, which for the own morpho-typological features are willing to undergo successful transformations.

The susceptibility to transformation of the 1st PEEP building stock depends on the typical features of great dimension housing. The great size housing represents the main mode of development of the 1st PEEP interventions. In the vast majority of cases, few buildings, particularly high or long, collect all the cubic content of the whole neighbourhood. The average building of all the 1st PEEP intervention is 17,000 cubic meters, a higher value than conventional peripheral buildings such as apartment houses or tower blocks. The highest value is the one of Corviale with 33,000 cubic meter per building.

Such a model became an efficient solution for the reduction of construction, management and urban services costs and for the chance to realize a significant number of dwellings aimed to face the huge housing emergency of that time. In an unconditional way all the interventions were oriented to the great dimension. The Public Authorities tried to introduce prefabricated components in the construction process, assuming to be able to control the quality of constructions and the relative costs and progress. This hap-

pened only in a smaller part than expected, generating several malfunctions, leading to delays and cost rises and to poor realization from a construction point of view.

From a typology point of view, the great dimension housing turned out to be an interesting chance for the involved designers to realize interesting experimental solutions, proposing even megastructures projects. The 1st PEEP in fact became a notable period for the Italian architecture, an important typological laboratory. A residential megastructure is a building at high density characterized by: a functional mix (residential, commercial or services spaces); a separation of vehicular and pedestrian flows; open and closed common areas; a modularity and articulated repetition of the housing system; a typological integration between different modules; a structural monumental trestle in which the accommodation fit in a smaller scale; a relationship of collision with the site topography; a self-referentiality of the sign that exclusively identify them (Banham, 1973).

The large size housing gave/inspired designers the urge/impulse to undermine the concept of standard typological aggregation between the different housing units. Often, the aggregation in plan and elevation of the various dwellings were planned in a totally/completely alternative way to the conventional solutions. In the whole building entity, designers tried to go beyond the standard designing approach based on schematic repetition of standard models. Some interventions in particular tried to propose a varied supply of dwellings, with different surfaces and forms, added up without repetitiveness.

Another experimental element in some cases is the morphological and functional organization of the spaces on the ground floors and roof tops which are characterized by the presence of articulated paths and common areas, well identifiable in the global system. Furthermore, the inclusion of residential services was a major step forward the integration between the housing and urban context, that tried to relate the private space of the house with the public of the city.

In the end, within the complex of great size 1st PEEP interventions, there are two different sets of buildings: the mega-structures and the standard big buildings. Overall in megastructures a greater predisposition to transformation is found compared to cases of standard type, becoming the preferred complexes on which to focus the interventions of urban regeneration at the building scale.

In Pineto and Vigne Nuove cases, two of the roman megastructures together with Corviale and Laurentino, the incidence of space on the ground floors and roofs, originally destined for common functions and today used improperly or abandoned, stand respectively for the 30% and 21% of the whole residential surface. These spaces are ideal for the temporary relocation of tenants in the organization of the intervention of retrofitting. It must be stressed that these values are higher in relation to the other standard cases analyzed, such as Prima Porta and Torrevecchia[4], that arrives at 9% and 8%. Two other indexes fundamental for transformation evaluation are the possibility of installing solar panels on the roof floors, and the average height of common spaces. Both indexes in megastructural cases are higher. In Pineto and Vigne Nuove, the index of free space for solar panel at the roof tops is 62% and 46% of the total roof surface. In the conventional cases such as Castel Giubileo, Prima Porta and Torrevecchia this value does not reach 40%. The average height of common spaces, in Pineto and Vigne Nuove is 4.01 m and 2.87 m. The index provides information on the chance of intervening with change of use or technological implementation of the slabs. The non-megastructural cases does not reach 2.80 m.

At the current state of material decay of buildings, the operations at the building scale are necessary. In most of the cases, the interventions date back to '70s and '80s, period when prefabricated techniques and rationalization of construction processes started to be experimented. Nowadays, these prefabricated construction elements are no longer able to guarantee acceptable comfort level due to the general material decay. For instance, the general energy consumption results very high specially because of the poor performances of the casing materials.

[4]These cases of study are analysed in "CRI_TRA: an integrated approach to the evaluation of critical issues and potential transformation of public social housing", Lorenzo Diana PhD thesis. Further information on CRI_TRA method in (Diana , 2015b).

Building deficiencies are not limited to the energy and environmental performances. Important critical issues are also connected to structural problem, above all related to the seismic risk. Overall, it is the global supply to be poor, unable to meet the contemporary demand, not the least those of typological nature and size of dwellings. The size of the public accommodations, specially 1st PEEP ones, is referred to a model of 40 years ago family unit which is extinguished by now, in favour of single-parent families or young couples. Also with regard to the internal distribution, existing dwellings shows a straight separation between different zone of the accommodation, with an important weight of the connection elements with respect to more open models that guarantee better flexibility in use.

In the end, great size public housing regeneration should be a muti-scalar process, starting from a global urban level arriving at the building scale. Thanks to their extension and diffusion, the regeneration of great size neighborhoods, , could stimulate the general regeneration of suburbs.

Conclusion

The cross-reading of different data density as well as the knowledge of the features of buildings which are part of the great size public social housing asset and the mapping of their critical issues may help Public Authorities which are interested in urban regeneration to identify the ideal place where intervene.

In conclusion, several reasons encourage us to look at the large size city as the place to address the interest of the urban regeneration. Some reasons are referred to the category of the "need", those connected to the raised critical issues, and other fall into the category of "possibility", those related to the predisposition of urban fabric and buildings to undergo interventions of regeneration.

The main critical issues stood in the general state of abandon of the buildings and public spaces, characterized by material and performance decay of constructive elements and widespread state of neglect of green public areas and squares. In addition to this, the complex supply of this type of neighbourhoods fails to intercept the instances of the contemporary demand, especially in terms of type, shape and number of dwellings.

From the transformation point of view, the main features are those concerning the form and nature of the urban fabric and, at a more detailed level, relating to the typological nature of the residential complexes. The concentration in compact and big buildings of the total cubic content settled leaves ample free spaces on which it is possible to intervene both through minimum densification and volume zero. These last would aim to enhance the green areas, by the realization of urban parks and the protection of green lawns and gardens, in a global logic of reduction of the heat island phenomenon.

Regarding the typological aspects, the conformation of the complexes of large size provides good chance for effective regeneration interventions, especially in megastructural cases, where in the ground floors and roofs the presence of extra-residential function spaces ensure possibility of transformation, change of use and densification with minimum land consumption.

As a whole, for its extensiveness and spread, the great size city is the ideal place to look at for sustainable suburbs regeneration that could stimulate virtuous processes also for the nearby neighbourhoods.

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